

Calderbank 19-6-42

IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE

## Patent Application

Inventor(s)	Arthur Robert Calderbank Ayman Naguib Nambirajan Seshadri	Case Name	Calderbank 19-6-42
Filing Date	4/28/1999	Serial No.	09/300494
Examiner	Chieh M Fan	Group Art Unit	2634
Title	Combined Channel Coding and Space-Block Coding in a Multi-Antenna Arrangement		

ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231  
SIR:

## AMENDMENT

In response to an Office action dated March 12, 2002, please amend the above-identified application as follows:

IN THE SPECIFICATION:

Page 5, replace the paragraph beginning at line 19 with:--

Increased data rate is achieved by, effectively, splitting the incoming data rate into multiple channels, and each channel is transmitted over its own terminal. Viewed another way, information symbols from a transmitting terminal is split into  $L$  parallel streams. Stream  $l$  is encoded using a channel code with rate  $R_l$  and then coded with a space-time block encoder with  $N$  transmitting antennas. Advantageously, the coding rates are chosen such that  $R_1 < R_2, < \dots, < R_L, \dots$ ;

Page 14, replace the paragraph beginning at line 8 with:--

FIG. 2 presents an arrangement for increasing the data rate or throughput in wireless systems. In FIG. 2, the information to be transmitted is demultiplexed in element 40 into two streams. One stream is applied to channel encoder 41, and the other stream is applied to channel encoder 51. The output of channel encoder 41 is applied to space-time block encoder 42, and then to mapper and pulse shaper 43 and antennas 44 and 45. Similarly, the output of channel encoder 51 is applied to space-time block


**LAW OFFICE OF  
HENRY T. BRENDZEL**

<b>Date:</b> May 21, 2002	
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<b>Re:</b> Serial No: 09/300494	<b>Pages:</b> Cover + 13


Henry Brendzel

<b>TRANSMITTAL FORM</b> (to be used for all correspondence after initial filing)		Complete if Known	
		Application Number	09/300494
		Filing Date	4/28/1999
		First Named Inventor	Arthur Robert Calderbank
		Examiner Name	Chieh M Fan
		Group/Art Unit	2634
Total number of pages in this Submission: this page, plus		12	Attorney Docket ID
			Calderbank 19-6-42

ENCLOSURES (check all that apply)		
<input type="checkbox"/> Fee Form ( <input type="checkbox"/> Check included)	<input type="checkbox"/> Assignment Papers (for an Application)	<input type="checkbox"/> Postcard(s)
<input type="checkbox"/> Fee Form not included, but should a fee be due, the Commissioner is Authorized to charge Deposit Account No 500732 of Henry T. Brendzel	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> Small Entity Statement
<input checked="" type="checkbox"/> Amendment/Response	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Request for a Refund
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition Routing Slip (TO/SB/69) and Accompanying Petition	<input type="checkbox"/> After Allowance Communication to group
<input type="checkbox"/> Affidavit(s)/Declaration(s)	<input type="checkbox"/> To Convert a Provisional Application	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Power of Attorney, Revocation or Change of Correspondence Address	<input type="checkbox"/> Appeal Communications to Group (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Express Abandonment	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Certified Copy of Priority document(s)	<input type="checkbox"/> Terminal Disclaimer	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Response to Missing Parts/Incomplete Application	<input type="checkbox"/> To Convert to Statutory Invention Registration	<input type="checkbox"/> Other
<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.2 or 1.53		
<input type="checkbox"/> Declaration (no Missing Parts Notice)		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm or Individual Name	Henry T. Brendzel	
Signature		Date 5/21/02

CERTIFICATE OF MAILING		
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelop addressed to the Assistant Commissioner for Patents, Washington D.C. 20231 on this date: <span style="border: 1px solid black; display: inline-block; width: 150px; height: 1.2em; vertical-align: middle;"></span>		
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